

## ABSTRACT

Vector-meson decay of baryon  $N^*$  and  $\Delta$  resonances will be studied through photoproduction reactions as a means of identifying new but predicted resonances and for making critical tests of quark models inspired by QCD. Several quark models can successfully describe the known baryon resonances up to masses of about 2000 MeV. These models also predict the existence of other resonances that are as yet unidentified. Several of the resonances have appreciable couplings to the  $\gamma N$ ,  $\rho N$ , and  $\omega N$  channels, and they may have been unpopulated in earlier  $\pi N$  experiments. The Isgur-Karl model, the Quark-Pair-Creation model, and other models predict substantial omega decay widths of many of the baryon resonances, but there are as yet no data for this decay mode. The proposed experiment will use a 2.4-GeV electron beam and the photon tagger to produce photons over the energy range of 700–2150 MeV, corresponding to the  $s$ -channel resonance mass range of 1500–2200 MeV. Vector mesons will be detected in the CLAS detector, which will also be modified to permit the detection of  $\pi^0$  particles from the decays of  $\rho^\pm$  and  $\omega$  mesons.